

REMARKS

Claims 22-24, 26-28 and 34-39 are currently pending. Claims 22-24 and 34-39 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over U.S. Patent No. 5,814,569 to Suzuki et al. ("Suzuki") in view of U.S. Patent No. 5,882,562 to Kozulla ("Kozulla"). Claims 26-28 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Suzuki in view of Kozulla, further in view of U.S. Patent Application Publication No. 2003/0100238 to Morman et al. ("Morman"). Applicants respectfully request reconsideration of this application in view of the following remarks.

Applicants further note that Claim 24 was canceled in Applicants' Response to the Office Action dated May 22, 2008 (Response dated August 19, 2009). The Office Action indicates that this claim is still pending. Therefore, if Claim 24 is not already canceled, Applicants request that it now be canceled.

Claims 22-24 and 34-39 Are Patentable Over Suzuki In View Of Kozulla

Claims 22-24 and 34-39 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Suzuki in view of Kozulla. *Office Action*, page 2.

*Suzuki's Fabrics That Include Fibers Having a Polypropylene Sheath
Explicitly Do Not Have the Recited Elastic Recovery*

The Examiner alleges that Suzuki discloses nonwoven fabrics comprising polypropylene conjugate continuous filaments, which are subjected to heating and drawing in order to form elastic nonwovens. *Office Action*, page 2. The Examiner then alleges that the nonwoven has the properties of 86% recovery from 100% elongation in the cross direction and has a ratio of elongation at break in the machine direction of at least 8. *Id.* The Examiner next alleges that the drawing treatment is performed at a temperature above the softening but below the melting point of the fibers, and that the draw rate is 10-80% and preferably 40-75%. *Id.* The Examiner acknowledges that Suzuki does not disclose the claimed property of at least 60% recovery from a 150% elongation and does not disclose the claimed strain rate. *Id.* at pages 2-3. However, the

Examiner alleges that it is “reasonable to presume” that the material of Suzuki would have the claimed property of at least 70% recovery from 100% elongation. *Id.* at page 3.

Applicants submit that the Examiner is in clear error. The one example of Suzuki that includes a polyester core with a polypropylene sheath does not have at least 70% recovery from 100% elongation. See Suzuki Example 6 and Table 2. It has a 68% recovery from 100% elongation. The fabric cited by the Examiner as having 86% recovery from 100% elongation includes a polyethylene sheath, not a polypropylene sheath. Therefore, it is incorrect to state that Suzuki’s materials formed from fibers having a polypropylene sheath have a 70% recovery from 100% elongation. Additionally, as Suzuki’s fabrics that include fibers having a polypropylene sheath do not show at least a 70% recovery from 100% elongation, it is unreasonable to presume that these materials would have the recited property of at least 60% recovery from 150% elongation.

Suzuki’s Fabrics Are Not the Same or Similar To The Claimed Nonwoven Webs Because Suzuki’s Fibers Include A Polyester Core

The Examiner alleges that she has provided sufficient rationale tending to show that the claimed product appears to be the same or similar to that of Suzuki. *Office Action*, page 3. This allegation is maintained despite that fact that Suzuki does not disclose that its fabrics have the claimed property of at least 60% recovery from a 150% elongation. This allegation is maintained despite the fact that Suzuki does not disclose the claimed strain rate. Most importantly, this allegation is maintained despite that fact Suzuki’s fibers include a polyester core, and that Suzuki specifically describes that when its process is used on 100% polypropylene fibers, the resultant fabric is “inferior in both elasticity and the percentage of elastic recovery.” *Suzuki*, col. 19, lines 8-9.

Again, Applicants submit that the Examiner is in clear error. All of the data cited by the Examiner to show the properties recited in the claims was obtained from fibers that have a

polyester core. As discussed above, the one example that describes fibers that consist entirely of polypropylene indicates that the resultant fabric is “inferior in both elasticity and the percentage of elastic recovery.” *Suzuki*, col. 19, lines 8-9. Thus, Applicants submit that Suzuki’s fabrics are clearly not the same or similar to the recited nonwoven webs that consist essentially of polypropylene. The polyester core is repeatedly cited as being a critical part of Suzuki’s invention, and the polyester core used in Suzuki (polyethyleneterephthalate; PET) is significantly different than polypropylene. First, the melting temperatures are significantly different, as the melting temperature of PET is approximately 256 °C and the melting temperature of polypropylene is approximately 160 °C. Furthermore, the densities of the polymers are different, as the density of PET is approximately 1.4 g/cc, while the density of polypropylene is approximately 0.92-0.96 g/cc. Thus, Suzuki’s fabrics are significantly different than the recited nonwoven webs, and the properties of Suzuki’s fabrics cannot be said to be relevant to the properties of fabrics that include fibers that consist essentially of polypropylene.

Kozulla Does Not Remedy The Deficiencies of Suzuki

The Examiner alleges that Suzuki teaches that polypropylene mono-component fibers suffer from drawbacks such as either degradation of the fibers during bonding or fiber slip during bonding as compared to bi-component fibers, and that Suzuki teaches that a fabric which comprised 100% mono-component polypropylene suffered from fiber slip during bonding and therefore produced lesser results. *Office Action*, page 4. However, the Examiner alleges that Kozulla teaches forming polypropylene fibers so that they have a skin/core structure so that the skin structure has a higher melt flow rate as compared to the core of the fiber. *Id.* The Examiner thus concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed the polypropylene fibers of Kozulla having a skin/core structure wherein the skin has a higher melt flow rate as compared to the core to make the nonwoven fabrics of Suzuki, with the expectation that the fibers would produce a fabric having superior CD properties of strength, elongation and toughness, as taught by Kozulla, and would not suffer from the issues of fiber slip or fiber degradation during bonding due to the skin/core

structure. *Id.* at pages 4-5.

Applicants submit that Kozulla does not remedy the many deficiencies of Suzuki. Suzuki describes that one disadvantage of mono-component filaments is the “collapse of the heat bonded areas at the time of heat drawing (in the case of heat bonding excessively the filaments of mono-component [sic] one another).” *Suzuki*, col. 12, lines 62-65. Suzuki also describes this problem in the prior art, stating that for mono-component filaments, “if the temperature is high at the time of heat bonding, each form of the filaments is completely collapsed in the heat bonded areas, and the heat bonded areas are holed or broken by the heat drawing.” *Suzuki*, col. 3, lines 44-47. Suzuki describes that this problem is solved by the use of the polyester core material, such that in the heat bonded areas, the conjugate filaments are heat bonded to one another by softening or melting the sheath components, and “the core components exist generally keeping the initial filamentous form otherwise in the filamentous form deformed a little, without softening or melting.” *Suzuki*, col. 5, lines 53-55.

Thus, during the heating of the fibers, Suzuki teaches that the sheath is the portion of the fiber that is softened or melted while the core remains intact. This is achieved in Suzuki by the use of core and sheath materials that have a substantial difference in melting temperature. The PET core used in Suzuki has a melting temperature of approximately 256 °C, and the polyethylene and polypropylene sheaths have melting temperatures of approximately 130 °C and 160 °C, respectively. Thus, the difference in melting temperature between the core and the sheath of the fibers in Suzuki is 126 °C for polyethylene and 96 °C for polypropylene.

In Kozulla, the fibers have a core/skin structure. However, the polypropylene core in Kozulla does not have a significantly higher melting temperature than the sheath and so would be softened or melted, and so collapsed, at the bonding temperatures used in Kozulla (See Tables 8-10 and 18-20). While the melt flow rate of polypropylene may vary significantly with molecular weight, the melting temperature of polypropylene does not. In support of this assertion,

Applicants provide herewith a copy of a publication by C. Tzoganakis et al. ("Effect of Molecular Weight Distribution on the Rheological and Mechanical Properties of Polypropylene," *Polymer Engineering and Science*, March 1989, Vol. 29, No. 6). In Table 1 of this reference (page 391), the molecular weight of the polypropylene samples range from 47,500 g/mol to 348,300 g/mol. As can be seen from Fig. 12, the melt flow index varied substantially with the increase in molecular weight. However, as can be seen in Fig. 16(a), the melting point was approximately 163 °C and did not vary substantially with variation in melt flow index. Applicants also submit herewith a copy of a publication by Krentsel et al. ("Preparation of crystalline polypropylene by the polymerization of technical propene in presence of triisobutylaluminum and titanium tetrachloride," *Russian Chemical Bulletin*, Springer, New York, 2004) which shows that low molecular weight polypropylenes, having molecular weights of 26,000 g/mol and 32,000 g/mol, had melting temperatures of 150 °C and 154 °C, respectively.

Thus, even at low molecular weights, the melting temperature of polypropylene is not significantly lowered, and thus, the core and sheath of Kozulla's fibers do not have a significantly different melting temperature. Therefore, one of ordinary skill in the art would not expect that the fibers of Kozulla could be bonded through the sheath while keeping the polypropylene core intact. Given the lack of intact core fibers, one of ordinary skill in the art would not expect that fabrics formed by using Kozulla's fibers in Suzuki's processes would be suitable, and certainly would not expect that they would have the recited elastic properties. Therefore, one of ordinary skill in the art at the time of the invention would not have been motivated to use Kozulla's fibers in Suzuki's methods.

In summary, Applicants submit that the fabrics created by Suzuki's methods are not appropriate to compare with the claimed nonwoven webs because Suzuki's fibers include a polyester core while the claimed nonwoven webs consist essentially of polypropylene. Given this, Applicants submit that the Examiner is in error in assuming Suzuki's products are the same or substantially similar to the recited nonwoven webs. Applicants further submit that one of

ordinary skill in the art at the time of the invention would not have combined Suzuki with Kozulla to arrive at the presently claimed invention because the skilled artisan would have appreciated that the melting temperatures of Kozulla's core and sheath are not far enough apart to both bond the fibers and keep the core of the fiber intact. Thus, one of ordinary skill in the art would not expect that fabrics formed by using Kozulla's fibers in Suzuki's processes would have the recited elastic properties. Therefore, Applicants submit that Claims 22-24 and 34-39 are patentable over Suzuki in view of Kozulla, and respectfully request that the present rejection be withdrawn.

Claims 26-28 Are Patentable Over Suzuki In View of Morman

Claims 26-28 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Suzuki in view of Kozulla, further in view of Morman. *Final Action*, page 5.

For at least the reasons described above with respect to Claim 22, from which Claims 26-28 depend, Applicants submit that Claims 26-28 are patentable over Suzuki in view of Kozulla. As Morman is only cited for describing laminate formation, Morman does not remedy the deficiencies of Suzuki and Kozulla. Therefore, Applicants respectfully request that the present rejection be withdrawn.

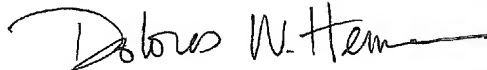
CONCLUSION

Having addressed all of the issues raised by the Examiner in the pending Office Action, Applicants believe that the claims as presented herein are in condition for allowance, which action is respectfully requested. The Examiner is invited and encouraged to contact the undersigned directly in order to expedite the prosecution of the pending claims to issue.

ATTORNEY DOCKET NO. 9286-32
Application Serial No. 10/780,781
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No fee is believed to be due with this response. However, the Commissioner is authorized to charge any deficiency associated with this filing or credit any overpayment to Deposit Account No. 50-0220.

Respectfully submitted,



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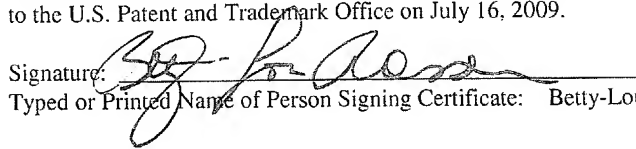
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